1. (Amended) An Fe-Ni-Co alloy whose chemical composition comprises, by weight based on total weight:

$32\% \leq Ni \leq 34\%$

$3.5\% \leq Co \leq 6.5\%$

$0\% \leq Mn \leq 0.1\%$

$0\% \leq Si \leq 0.1\%$

$0\% \leq Cr \leq 0.1\%$

$0.005\% \leq C \leq 0.02\%$

$S \leq 0.001\%$

$0.0001\% \leq Ca \leq 0.002\%$

$0.0001\% \leq Mg \leq 0.002\%$

and further comprising iron and impurities resulting from smelting; the chemical composition of the alloy furthermore satisfying the relationships:

$Co + Ni \leq 38.5\%$

$Co + 0.5 \times Ni \geq 20\%$

$Co + 5 \times Ni \geq 165.5\%$

and

$S \leq 0.02 \times Mn + 0.08 \times Ca + 0.6 \times Mg$

wherein said alloy has a martensitic transformation start point of less than -50°C, an average coefficient of thermal expansion between 20° and 100°C of less than or equal to $0.7 \times 10^{-6}/°K$ and a mean coefficient of thermal expansion between 80°C and 130° of less than or equal to $1 \times 10^{-6}/°K$.

7. (Amended) A shadow mask, which comprises at least one foil having holes, said foil comprising an alloy whose chemical composition comprises, by weight based on total weight:

$32\% \leq Ni \leq 34\%$

$3.5\% \leq Co \leq 6.5\%$

$0\% \leq Mn \leq 0.1\%$

$0\% \leq Si \leq 0.1\%$

$0\% \leq Cr \leq 0.1\%$

$0.005\% \leq C \leq 0.02\%$

$S \leq 0.001\%$

$0.0001\% \leq Ca \leq 0.002\%$

$0.0001\% \leq Mg \leq 0.002\%$

and further comprising iron and impurities resulting from smelting; the chemical composition of the alloy further satisfying the relationships:

$Co + Ni \leq 38.5\%$

$Co + 0.5 \times Ni \geq 20\%$

$Co + 5 \times Ni \geq 165.5\%$

and

$S \leq 0.02 \times Mn + 0.08 \times Ca + 0.6 \times Mg$

wherein said alloy has a martensitic transformation start point of less than -50°C, an average coefficient of thermal expansion between 20° and 100°C of less than or equal to 0.7 x 10^{-6}/°K and a mean coefficient of thermal expansion between 80°C and 130°C of less than or equal to 1 x 10^{-6}/°K.

8. (Amended) A method of forming a shadow mask, comprising the steps of forming holes in a foil and drawing said hole-containing foil, wherein the foil comprises an alloy having a chemical composition which comprises, by weight based on total weight:

$32\% \leq Ni \leq 34\%$

$3.5\% \leq Co \leq 6.5\%$

$0\% \leq Mn \leq 0.1\%$

$0\% \leq Si \leq 0.1\%$

$0\% \leq Cr \leq 0.1\%$

$0.005\% \leq C \leq 0.02\%$

$S \leq 0.001\%$

$0.0001\% \leq Ca \leq 0.002\%$

$0.0001\% \leq Mg \leq 0.002\%$

and further comprising iron and impurities resulting from smelting; the chemical composition of the alloy further satisfying the relationships:

$Co + Ni \leq 38.5\%$

$Co + 0.5 \times Ni \geq 20\%$

$Co + 5 \times Ni \geq 165.5\%$

and

$S \leq 0.02 \times Mn + 0.08 \times Ca + 0.6 \times Mg$

wherein said alloy has a martensitic transformation start point of less than -50°C, an average coefficient of thermal expansion between 20° and 100°C of less than or equal to 0.7 x 10^{-6}/°K and a mean coefficient of thermal expansion between 80°C and 130°C of less than or equal to 1 x 10^{-6}/°K.

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